

MODEL 224XSTHI
INSTALLATION AND SERVICE INSTRUCTIONS
FOR FEDERAL MODEL 224XSTHI
VISUAL SIGNAL APPLIANCES FOR THE HEARING
IMPAIRED FOR USE IN HAZARDOUS LOCATIONS

Address all communications and shipments to:



FEDERAL SIGNAL CORPORATION
Electrical Products Division
Service Department
2645 Federal Signal Drive
University Park, IL 60466-3195

**INSTALLATION AND SERVICE INSTRUCTIONS FOR FEDERAL MODEL 224XSTHI
VISUAL SIGNAL APPLIANCES FOR THE HEARING IMPAIRED
FOR USE IN HAZARDOUS LOCATION**

 SAFETY MESSAGE TO INSTALLERS, USERS AND MAINTENANCE PERSONNEL

It is important to follow all instructions shipped with this product. This device is to be installed by a trained electrician who is thoroughly familiar with the National Electrical Code and will follow the NEC Guidelines as well as local codes.

This device should be considered a part of the warning system and not the entire warning system.

The selection of the mounting location for the device, its controls and the routing of the wiring are to be accomplished under the direction of the facilities engineer and the safety engineer. In addition, listed below are some other important safety instructions and precautions you should follow:

- Read and understand all instructions before installing or operating this equipment.
- Never alter the unit in any manner. Safety may be compromised if additional openings or other alterations are made to the unit.
- Do not connect this light to the system when power is on.
- After installation, ensure that the setscrew and threaded joints are properly tightened.
- Keep unit tightly closed when in operation.
- After testing is complete; provide a copy of this instruction sheet to all operating personnel.
- Establish a procedure to routinely check the light installation for integrity and proper operation.

Failure to follow all safety precautions and instructions may result in property damage, serious injury, or death to you or others.

I. GENERAL.

The Model 224XSTHI strobe light is a Visual Signaling Device for the Hearing Impaired for use in Hazardous Locations and provides about 80 high intensity flashes per minute. The unit is UL Listed for indoor use on a wall or ceiling in a nonsleeping area and complies with the TYPE 4X (watertight and corrosion resistant) and IP66 (dust-tight and protection against heavy seas) enclosure requirements.

For the Electrical Ratings and Light Dispersion Pattern of the Model 224XSTHI, reference Table 1 and Figure 1.

II. INSTALLATION.

A. Unpacking.



Damaged globes can lead to explosions, which could result in serious injury or death.

After unpacking the unit, examine it for damage that may have occurred in transit. If the equipment has been damaged, do not attempt to install or operate the unit. File a claim immediately with the carrier, stating the extent of damage. Carefully check all envelopes, shipping labels and tags before removing or destroying them.

B. *Mounting.*

The Model 224XSTHI strobes are designed for hearing impaired applications and should be installed per the NFPA 70 & 72, STATE and LOCAL CODES. Alternate installation locations and/or orientations should only be performed with the approval of the authority having jurisdiction. Reference Figure 1 for the light dispersion pattern of the 224XSTHI.



To reduce the risk of fire or explosion, do not install in a hazardous location if the operating temperature exceeds the ignition temperature of the hazardous atmosphere. Refer to the product nameplate for operating temperature markings.

The Model 224XSTHI has provisions for mounting to 1/2" N.P.T threaded pipe. The conduit run from the device to the splice box shall not be larger than 10 inches. Before mounting, ensure that mating threads are clean.

C. *Electrical Connections.*



To avoid electrical shock hazards, do not connect wires when power is applied.

The DC Models Operating Voltage Range Limits are 16 – 33Vdc.



This product was only tested to its rated operating voltage range. It was not tested to 80% and 110% of these limits.



The DC units are polarity sensitive, and **MAY BE DAMAGED** by incorrect electrical hookup. When connecting the DC strobe unit to the voltage supply lines, **POLARITY MUST BE OBSERVED**. In addition, damage will result if the voltage operating range of the model is exceeded.

The 224XSTHI units are provided with five leads; two red, two black and one green/yellow. To achieve electrical supervision, connect one red (+) lead to the positive side of the incoming power source and the other red (+) lead to the outgoing power source. Then connect one black (-) lead to the negative side of the incoming power source and the other black (-) lead to the negative side of the outgoing power source. If required local building codes, connect the earth ground to the grounding screw located in the mounting hood.

III. **MAINTENANCE.**



To prevent receiving an electrical shock, disconnect the fixture from the supply circuit before opening.

High voltages are present inside the light assembly. Wait at least 5 minutes after disconnecting power before servicing this unit.

SAFETY MESSAGE TO MAINTENANCE PERSONNEL

Listed below are some important safety instructions and precautions you should follow:

- Read and understand all instructions before operating this system.
- Any maintenance to the light system must be done with the power turned off.
- Any maintenance to the light system must be performed by a trained electrician in accordance with all applicable national and local codes in the country of use.
- Never alter the unit in any manner. Safety of the unit may be compromised if additional openings or other alterations are made.
- The nameplate should not be obscured, it contains cautionary and/or other information of importance to maintenance personnel. Ensure the nameplate remains readable if the housing's exterior is painted.
- If dome is damaged in any way, it **MUST** be replaced.
- After performing any maintenance, test the light system to ensure that it is operating properly.

Failure to follow all safety precautions and instructions may result in property damage, serious injury, or death to you or others.

A. *Flash Tube Replacement.*

As strobe lights are used, the flash tubes begin to darken, causing the light output to decrease. This darkening is characteristic of flash tubes. The darkening will begin near the base of the tube and progress upward. In addition, as flash tubes age, they may have a tendency to misfire (not fire periodically).

After extended operation, occasionally check for flash tube degradation. Should the flash tube misfire, have a noticeable decrease in light output, glow continuously or darken to a point beyond that shown in Figure 2 — it should be replaced.

WARNING

High voltages are present inside the light assembly. Wait at least 5 minutes after shutting off the power before servicing this unit.

To change the flash tube, proceed as follows:

1. Disconnect power.
2. Loosen the setscrew, located on the globe-and holder assembly.
3. Grasp the top of the dome and push down while turning the dome counterclockwise approximately 3/4-inch (19 mm).

WARNING

Effectiveness of hazardous location enclosure must be maintained. Do not damage globe or threads while disassembling or reassembling unit. Lubricated joints exposed for long periods of time may attract small particles of dirt or other foreign materials. Body and cover joints should be reassembled immediately.

4. Gently lift dome away. Ensure that the gasket between the dome and base is not lost.

5. Loosen the retaining ring fastening screws approximately 1/2-turn. The retaining ring can then be turned counterclockwise approximately 1/2-turn. The retaining ring can then be lifted free of the unit. The interior lens can now be removed from the unit.

6. Grasp the flash tube by its base and pull it out of the socket, using a gentle “rocking” motion. Install new flash tube, ensuring that the flash tube is fully seated in the socket.

7. Reinstall interior lens.

8. Before replacing the dome, ensure that the gasket is properly seated and shows no signs of cracking or other deterioration. Replace the gasket if it is damaged or shows signs of deterioration.

9. Place the dome over the base, aligning the recesses inside the dome lip with the four pins on the base. Push down on the dome and turn clockwise until it locks in place [approximately 3/4-inch (19mm)].

10. Replace the screw into the bottom of the dome.

11. Test the light for proper operation.

B. *Circuit Board Replacement.*



High voltages are present inside the light assembly. Wait at least 5 minutes after shutting off the power before servicing unit.

1. Disconnect power.

2. Remove the setscrew located at the bottom of the dome.

3. Grasp the top of the dome and push down while turning the dome counterclockwise approximately 3/4-inch (19mm).

4. Gently lift dome away. Ensure that the gasket between the dome and base is not lost.

5. Loosen the retaining ring fastening screws approximately $\frac{1}{2}$ turn. The retaining ring can then be turned counterclockwise approximately $\frac{1}{2}$ inch (13mm), allowing the retaining to be lifted free of the unit. The interior lens can now be removed from the unit.

6. Remove and retain the screws and heat sink clip, which secures the power supply circuit board to its mounting plate. Remove the power connector(s) from the P.C.B. Since some strobes are polarity sensitive, connect matching colored wires together.

7. Secure the new circuit board to the mounting plate with the previously removed screws and reattach heat sink clip.

8. Install flash tube as described in Section III.A. (Flash Tube Replacement). Ensure that the flash tube is fully seated in the socket.

9. Reinstall interior lens.

10. Before replacing the dome, ensure that the gasket is property seated and shows no signs of cracking or other deterioration. Replace the gasket if it is damaged or shows signs of deterioration. Replace the gasket if it is damaged or shows signs of deterioration.

11. Place the dome over the base, aligning the recesses inside the dome lip with the four pins on the base. Push down on the dome and turn clockwise until it locks in place [approximately 3.4-inch (19mm)].

12. Replace the screw into the bottom of the dome.

13. Test the light for proper operation.

C. *Cleaning Enclosure.*

NOTE

Maintenance procedures sometime require fixtures to be hosed down for good house-keeping. The circuit must be turned OFF and fixture globe MUST be allowed to cool to ambient room temperature before cleaning.

The fixture should be cleaned periodically to maintain maximum light output. Only mild, non-abrasive cleaning agents should be used. The dome should be regularly inspected for scratches and chips, and if damaged, must be replaced.

D. *Service.*

Federal Signal will service your equipment and provide technical assistance with any problems that cannot be handled locally by Federal Signal's Distributor or Manufacturer Representative.

If any unit returned to Federal Signal for service, inspection, or repair must be accompanied by a Return Material Authorization number with a brief explanation of the service being requested and/or the nature of the malfunction. This R.M.A. can be obtained from the local Federal Signal Distributor or Manufacturer's Representative.

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E. *Replacement Parts.*

Description	Part Number
Exterior Dome, Clear 24Vdc	K8444291B-15
Interior Lens, Clear	K8550C095A
Flash Tube/Trigger Coil Assy.	K8107177A
Gasket	K8444286B
Circuit Board Assy.	K2001202C-01
In-Rush Board Assy.	K2001918A

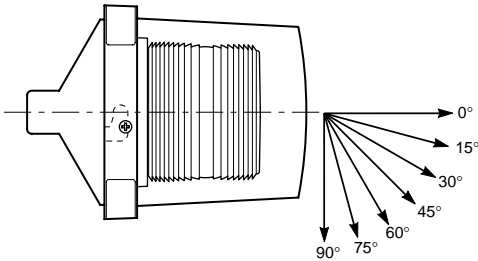
Table 1

Electrical Ratings	
Operational Voltage	24V dc
On-Axis Candelas	15
Flashes/minute	75
Frequency, Hz	DC
Inrush Current, A	2.0
Max. DC Operating Current, A	0.75

1

Model 224XSTHI Signaling Device for the Hearing Impaired Light Dispersion Pattern per UL1971.

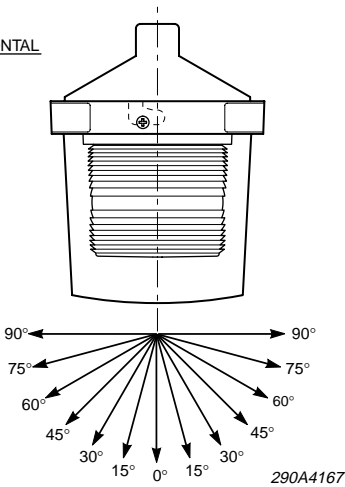
ON AXIS VERTICAL



Vertical Light Dispersion Pattern

Degrees	UL Min. per UL1971
0°	15.00
5-30°	13.50
35°	9.75
40°	6.90
45°	4.05
50°	4.05
55°	3.30
60°	2.70
65°	2.40
70°	2.25
75°	1.95
80°	1.80
85°	1.80
90°	1.80

ON AXIS HORIZONTAL

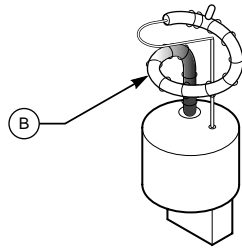
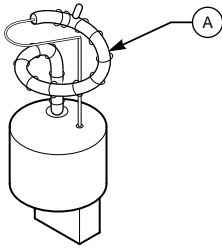


Horizontal Light Dispersion Pattern

Degrees	UL Min. per UL1971
0°	15.00
5-25°	13.50
30-45°	11.25
50°	8.25
55°	6.75
60°	6.00
65°	2.40
70°	5.25
75°	5.25
80°	4.50
85°	3.75
90°	3.75

290A4167

2



290A4168

A. New flash tube.

B. Used flash tube tends to discolor in areas shown, and should be replaced.